render to patients that order of therapeutic procedure which will restore them to as near normal condition as possible with the highest degree of function. He must use extraordinary tact in his discussion of existing pathological conditions, when satisfying the curiosity and demands for information, not only from the patient himself, but also the members of his family. The implantation of morbid ideas through suggestions into the psyche or consciousness of a severely injured patient may often lead to fixed mental morbidities which may play a great part in impairing the normal function of his injured limbs or other parts of the body. Functional psycho-neuroses following severe joint, tendon, and nerve injuries, are often responsible for a great degree of the disability resulting from such injuries, and sometimes from very slight trauma.

It is very difficult to fix the degree of relative causation when neuropathic conditions develop subsequent to a series of industrial injuries extending over a period of several months or years. The object of paramount importance is to get away from the dogmatic discussions and the diagnostic hypotheses and settle down to the practical application of more recent methods of physiotherapy, such as deep therapy, diathermy, galvanism, faradism, mechanotherapy, massage, and the other kind of physical or mechanical readjustment that will clear up the complications subsequent to various injuries.

The time has come when the industrial surgeon and physician must recognize the true value of these recent therapeutic agencies and apply them properly in degree and modality, as indicated in each individual complication or pathological condition.

The psycho-neurotic personality may maintain a normal degree of occupational efficiency until he meets with a physical injury attended by psychic trauma. Following in the wake of the psychic trauma may come metabolic disturbances, manifested by recurrences of asthma and eczematous manifestations. Paralysis may develop which has only a psychic basis. A latent thyro-toxic condition may be aggravated and accentuated as a result of the emotional shock attending physical injury. It is not unusual for a cardiac myasthenia of the neuropathic type to manifest itself and thereby incapacitate the injured employe for a long period of time.

The state compensation law contemplates protecting the employe against disabilities arising from existing pathological conditions which may be aggravated by an industrial injury. Having this premises as a basis of medico-legal relationship with the patient who has met with an industrial injury, the physician in charge finds himself in a very delicate position, requiring extraordinary judiciary consideration as well as medical and surgical acumen.

And Still Some Who Promote Charity as a Business, Accuse Them—The doctor is one of the few professional men who gives his service free to the public. The doctors of the United States give away about $1,000,000 worth of service every day in the year to the indigent and to those who do not pay bills.—Chicago's Health, February, 1925, "The Physician."

"The Physician as a Sanitarian"—Every physician is a guardian of the public health, and the community expects him to be interested in medical matters of a public nature, just as they expect the lawyer to take part in the legal aspects of public affairs, or any other citizen to contribute his best thought upon public questions. The opportunities and influence of the physician as an educator are greater than those of almost any other group. Many have implicit confidence in the word of some physician, and the attitude of the public toward public health matters is to some extent a composite of the attitude of the physicians of the community.—Chicago's Health Bulletin.

MALIGNANT TUMORS OF THE KIDNEY

WITH SPECIAL REFERENCE TO DIAGNOSIS

By FRANK HINMAN, M. D., AND ADOLPH A. KUTZMANN, M. D.

(From the Department of Urology, University of California Medical School, San Francisco)

The incidence of malignant tumors of the kidney are to the extent of 0.25 to 1 per cent in adults; 0.06 to 0.1 per cent in children. Of tumors in general, they constitute from 0.5 to 2 per cent in adults and about 20 per cent in children.

The pathogenesis of kidney tumors is still in the hypothetical stage. The types most commonly found are the hypernephroma, occurring chiefly in late adult life and "embryonic mixed tumors" found during early childhood.

Clinically, all renal tumors should be considered malignant because of the great rarity of the benign types.

The classical signs of kidney tumor are hematuria, pain and tumor. Hematuria is the most frequent initial symptom in adults, while tumor is in children.

The importance of each symptom should be considered initially as it appears and the diagnosis not allowed to wait until the clinical picture is complete.

Only by thorough early investigation can we hope to influence the present appalling morbidity of 90 per cent.

The urological examination should always be complete and include a differential examination of the urine, functional studies, and ureteropyelography.

The correlation of the clinical findings and urological findings should be carefully entered into so that a diagnosis may be arrived at in the doubtful cases.

DISCUSSION *by George F. Schenck, Los Angeles; Nathan G. Hale, Sacramento; Paul A. Ferrier, Pasadena.*

THE surgical problem of care of malignancy any place in the human body has two very important and fundamental points: (1) An accurate diagnosis made early enough, (2) to make possible a complete and permanent removal of the tumor. Application of these principles in treating malignancy in some parts of the body has most markedly lowered the mortality. The breast, uterus, and mouth are notable examples, and the fact that metastases in these conditions occur primarily along the draining lymphatics which are surgically removable, still makes possible a small percentage of cures even in those who seek aid in the later stages of the disease. Thus Bloodgood has found, in thirty years' experience, that cancer of the tongue when gotten in the early stages yields a cure in 62 per cent of cases, while only 12 per cent are relieved in the later stages; in breast cancer, 70 per cent may be cured if treatment is sought as soon as the lump is felt, 25 per cent if the lower axillary glands have become involved, and only 10 per cent with the involvement of the higher axillary glands.

In malignancy of the kidney the problem is similar but more difficult, particularly respecting early diagnosis, and more radical surgery than nephrectomy has never been successfully advocated. There are really no pre-cancerous or early symptoms in kidney tumor. A. O. J. Kelley, in 1895, showed that 72 per cent of cases came to autopsy undiagnosed, in spite of advanced liver and lung metastases in many. Kronlein, in 1905, also encountered this problem and was unable to make an early diagnosis in twenty cases.

The ultimate mortality today is still an appalling one, being placed as high as 90 per cent by some

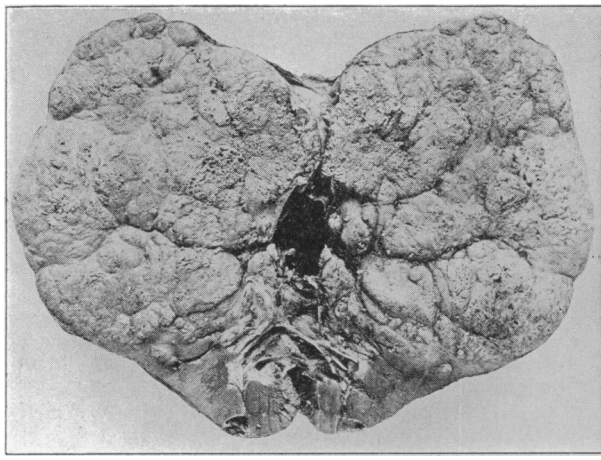

Figure 1.—Photograph showing a large hypernephroma involving almost the entire kidney except for the lower pole. Note the solidity of the tumor. This type is the common kidney tumor of adults.

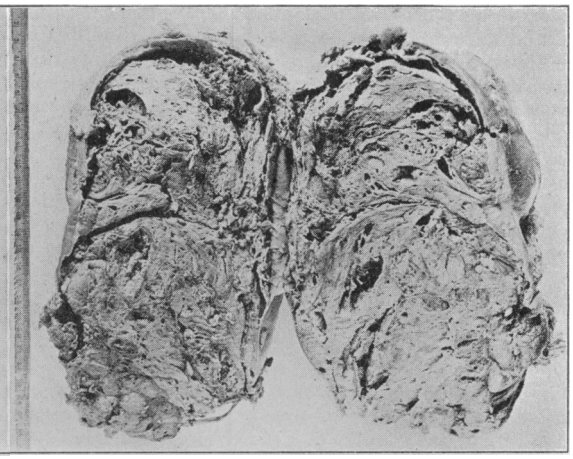

Figure 2.—Photograph of a large "embryonic mixed tumor" of the kidney, weighing 9.9 pounds. Note the varied picture due to multiple areas of hemorrhagic extravasation, degeneration and necrosis with multiple cyst formations. The tissue is friable and lacks supporting stroma. This is the common kidney tumor of children.

observers (Braasch). The onset is very insidious. By the time hematuria, pain or tumor appear, the case may be in an advanced stage. Gregroire attempted to apply surgical principles to renal tumor by a radical resection of the primary renal lymph zone at the time of nephrectomy, but, aside from technical difficulties, metastases occur chiefly by way of the blood stream to remote parts of the body, as a glance at the following tables shows quite forcibly.

Distribution of metastases in 176 cases of hypernephroma (Watson and Cunningham):

Hematogenous	Cases
Lungs	26
Bones	35
Internal organs	29
Liver	8
Brain	4
	102

Lymphogenous	Cases
Regional lymph glands	11
Scar	9
Adrenal	2
	22

	Cases
Lower G. U. tract	4
General metastases	6
Miscellaneous	7

Distribution of metastases in 307 cases of "embryonic mixed tumors" in children (Walker, Watson and Cunningham):

Hematogenous	Cases
Liver and lungs	34
Internal organs	16
Opposite kidney	11
Nervous system	1
	62

Lymphogenous	Cases
Retroperitoneal glands	12
Mesenteric glands	6
	18

	Cases
Miscellaneous	7

Metastases to a distant part of the body may lie dormant for a number of years. It has been found that cases have died six years after operation, and Kronlein cites a case which succumbed twelve years later.

The outlook is discouraging. So long as surgery remains the only hope in the face of this appalling mortality, the surgeon must make earlier diagnoses, inasmuch as more radical surgery is useless. The public, as well as physicians, should be thoroughly familiar with these facts, and the urologist should realize his personal responsibility by studying and improving methods of investigation. The urologic study of suspicious cases must be complete, thorough, and prompt in order to increase the percentage of early diagnoses. The findings of ureteral catheterization, pyelography and renal functional studies are not infallible. Even the urologist cannot make an accurate diagnosis in the majority of early cases.

HISTORICAL NOTE

Early descriptions of epithelial tumors of the kidney appear in the writings of König, Rayer, Parker, Shepherd, etc. Robin, in 1855, put forth the first definite description, showing them as being derived from the tubular epithelium. This was accepted by Waldeyer, Klebs, Recklinghausen, etc., who classified kidney tumors as benign adenomas and infiltrating carcinomas. In 1870, Catanni was apparently the first to recognize the occurrence of the sarcomatous elements. The first epochal article to appear was that of Grawitz, in 1883, wherein he recognized the yellowish cortical tumors to whom Birch-Hirschfeld, in 1892, applied the term "hypernephroma." They were regarded as springing from adrenal rests in the kidney. In 1894, the second great group of kidney tumors were described by Birch-Hirschfeld. From their structure, he suggested that they arose from Wolffian body rests and were mixed as to constituent tissues. He named them "embryonic adenosarcomata." In a very able discussion appearing in 1899, Wilms furthered the embryonic theory and called them "mischgeschwulste" or mixed tumors.

Since then there have appeared from time to time excellent discussions, but fundamentally very little has been added to the work of original investigators (Beneke, Muus, Sudeck, Klose, Garceau, Busse, Ribbert, Wilson, etc.)

Pathogenesis—The histogenic origin of the large groups of kidney tumors is still in doubt. Grawitz originally, and later Birch-Hirschfeld, showed that the hypernephroma came from adrenal rests in the kidney. This was later contested by Stoerck, who is of the opinion that their origin is renal. Wilson derives them from the nephrogenic blastema, and has applied to them the term "mesothelioma."

The views regarding the pathogenesis of the "mixed tumors" can be summarized as follows:

(a) That their origin is due to inclusions of Wolffian body tissue (Birch-Hirschfeld).

(b) That aberrant cells of the myotome and sclerotome are responsible for the tumor growth, and that the apparent mixed character is to be explained by the varying constituents which enter into the ultimate formation (Wilms).

(c) That these tumors are derived from the embryonic tissue of the true kidney, which persists and becomes metamorphosed (Busse, Muus, Ewing).

Due to this uncertain knowledge of origin, many classifications have been brought forward. For clinical purposes, the following from Eisendrath is probably the best:

1. Primary Neoplasms of the Parenchyma:
   Epithelial Type:
   (a) Adenoma.
   (b) Carcinoma.
   Connective Tissue Type:
   (a) Benign — fibroma, myxoma, chondroma, leio and rhabdomyoma, angioma.
   (b) Malignant—sarcoma.
   (c) Embryonal adenomyosarcoma — also called teratomata or mixed-cell tumors.
   Neoplasms Due to Misplaced Adrenal Rests—Hypernephroma.
2. Primary Neoplasms of the Renal Pelvis:
   Epithelial Type:
   (a) Papilloma (benign).
   (b) Papillary carcinoma.
   (c) Epithelioma (squamous-celled).

CLINICAL

Incidence—Renal tumor is not a very common occurrence. Collected statistics show that in general they occur in adults from 0.06 to 0.1 per cent.* In the University of California Hospital, from 1906 to 1923, inclusive, there have been twenty-nine cases among 46,800 admissions—0.06 per cent. In adults their relative occurrence among tumors in general is from 0.5 to 2 per cent; in children, they constitute about one-fifth (20.4 per cent).*

From the confusion as to pathogenesis and types, the hypernephromata and embryonic mixed tumors are the two most frequently found. The former occurs most frequently during late adult life, and the latter during early childhood. Next in frequency are the carcinomata of the parenchyma, papillary carcinomata of the renal pelvis and squamous-celled carcinomata of the renal pelvis.

* Hinman & Kutzmann: Malignant Tumors of the Kidney in Children. Ann. Surg., 1924, lxxx, 569.

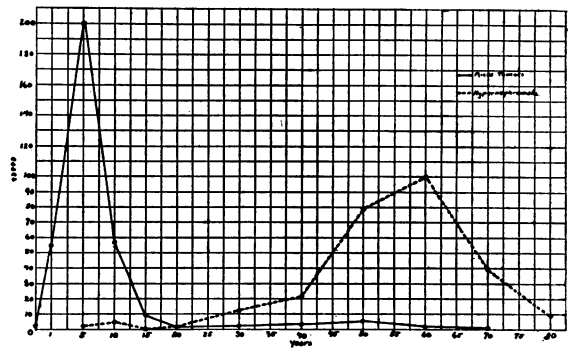

Figure 3.—Chart showing age incidence of hypernephromata and "embryonic mixed tumors." Note that the hypernephromata occur chiefly in old age, and "mixed tumors" in childhood. Based on 267 hypernephromata and 341 "mixed tumors."

Diagnosis—The signs and symptoms are an important factor in diagnosis, and yet they may not be pathognomonic. We are often confronted with a paradox; we must try to cure tumors which run a rapid and fatal course unless an early diagnosis can be made, and yet their onset usually is insidious; and when they present themselves with the usual diagnostic group of symptoms, the case may be beyond help, in spite of the fact that no metastases are clinically demonstrable. There present themselves a group of symptoms which have been found to be more or less constant, namely, the "cardinal trio"—hematuria, pain, and tumor. It has been our experience that when a case presents these symptoms, the diagnosis is not an early one and the case usually terminates fatally, in spite of surgical aid, and yet over one-third of cases coming to operation present these symptoms. To add to the difficulty it has been found that the pre-operative duration may be no index of the prognosis. Cases may even terminate fatally and never at any time show any sign or symptom. The lesson to be learned is that the appearance of any single symptom should at once lead to a thorough investigation.

The following table, prepared from various sources (Willan, Barney, Israel, Squier, Albrecht) presents at a glance the prevalence of the signs and symptoms in adults:

SIGNS AND SYMPTOMS OF MALIGNANT TUMOR OF THE KIDNEY IN ADULTS

	Initial Per cent	Associated Per cent
Hematuria	21.4-70 Av. 42	80
Pain	30-40 Av. 35	58
Tumor	18-20 Av. 19	85
Weakness and loss of weight (cachexia)	9-20 Av. 13.5	75
Varicocele (left)	.....	15
Fever	.....	8
Anorexia, vomiting, edema of legs, metastases	Rare	....

In children, the problem is even more difficult. Added to the insidiousness of onset, tumor is usually

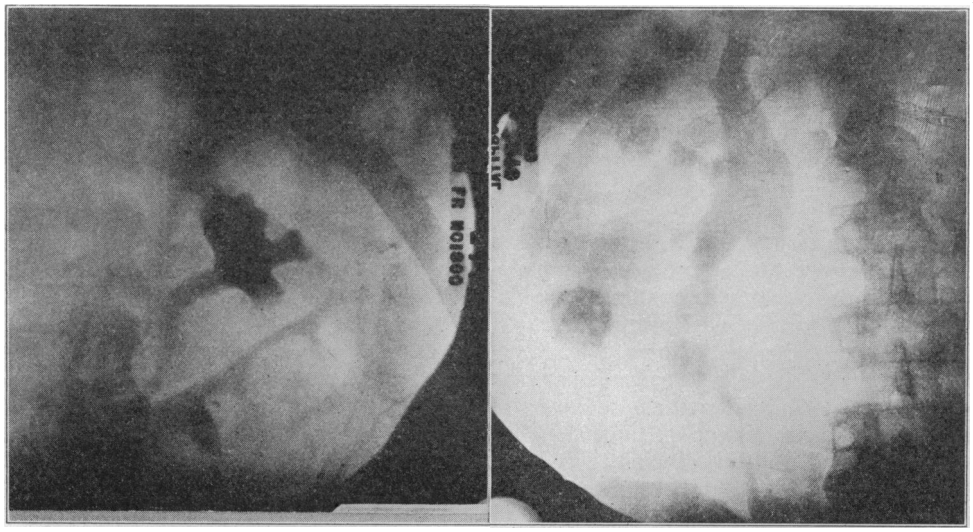

Figure 4.—Typical pyelogram of a malignant tumor of the kidney (hypernephroma) showing the "spider leg" deformity.

Figure 6.—Photograph of pyelogram of a polycystic kidney. The filling defects in these cases often simulate a malignant tumor and must be carefully differentiated.

the initial symptom; also, the protuberant abdomen of young children tend to mask this sign. Such tumors usually are not found until they have attained a large size, by accidental palpation or after cachexia and weakness have set in. The following table shows the prevalence of the signs and symptoms in children:

SIGNS AND SYMPTOMS OF MALIGNANT TUMOR OF THE KIDNEY IN CHILDREN

	Initial Per cent	Associated Per cent
Tumor	42-71 Av. 57	90
Pain	7-20 Av. 14	20
General weakness	11	
Vomiting	8.8	
Icterus	2.2	
Diarrhea, constipation, ascites	1 ea.	
Hematuria	Rare	5-35 Av. 14

That we have failed to make but little impression on the prognosis, is shown by the fact that the morbidity still ranges about the appalling figure of 90 per cent. We must be open-minded in facing this tremendous problem. Such a high figure in the ultimate mortality shows that diagnosis is too long delayed, either because the urologist is not seeing hematuria cases early enough, or because his methods are yet inadequate to make an early diagnosis. The important significance of blood in the urine must be taught, even though it be the only symptom and transient. Fraser reports a case of renal tumor in a child where there was a transient hematuria one year before operation, and yet the case was not seen by the surgeon until the tumor had reached a large size. Obviously, the urologic surgeon cannot be asked to cure malignant tumor if the case has gone until metastases have probably taken place.

Our experience with malignant tumors of the kidney is far from cheerful, yet it is probably no different from that of many others. In the last eighteen years, twenty-nine cases have presented themselves for treatment. Of these, twenty-three cases were definitely proven, while the remaining six have insufficient data. Seventeen cases occurred in adults, and six in children. Of these, eleven were operated upon; ten either refused operation or were deemed inoperable; two were completely missed during life and found at autopsy. But two cases are alive of the surgical cases and of these, one was lost sight of two months post-operative; the remaining case is still living and well seven months post-operative, so that we have no cases coming within the period of cure. The remaining surgical cases succumbed in from several days to two years. We can, therefore, expect practically a 100 per cent morbidity.

It seems that most of these cases were seen in the late stages of the disease. The following table, briefly shows their occurrence as to initial symptomatology:

Hematuria, Pain, Tumor		8 cases
Hematuria or Pain or Both		6 cases
Tumor	(all children)	5 cases
Cachexia and weakness		1 case
No urologic symptoms		3 cases
Aortic aneurysm	1	
Pulsating tumor of skull	1	
Exophthalmos	1	
		23 cases

Note that eight cases showed all three signs and symptoms, that five cases had large abdominal tumors, and one with cachexia—fourteen cases (60 per cent) in which at once the prognosis was a bad one. Twelve cases showed no clinical metastases,

and of these ten were operated. Eleven cases showed clinical evidence of metastases, and of these one was operated upon. This was a case which entered with a pulsating tumor of the right parietal bone, due to a head injury six weeks previously. The tumor was removed, and upon pathological examination proved to be a hypernephroma metastasis. Careful re-examination of the patient revealed a tumor of the left kidney which had been missed upon the first examination. Urological examination confirmed the diagnosis of left kidney tumor. The patient was again subjected to a most rigid physical examination, but no further evidence of metastases were found. In view of the fact that there are several reports of cases in the literature living and well over six years in whom a solitary metastasis was removed with the primary kidney tumor, a nephrectomy was performed. This patient is living seven months postoperative, without any further signs of metastases and has gained twenty pounds in weight.

Several of the cases have brought forth interesting points and difficulties as to diagnosis. One case entered the hospital with a large pulsating aortic aneurysm. This ruptured and caused death. Autopsy revealed a hypernephroma of the left kidney, yet at no time had there been any signs nor symptoms referable to the urinary tract. A similar case

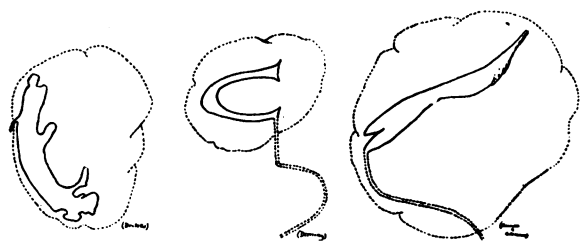

Figure 5. — Drawings showing pelvic deformities of "mixed tumors" of the kidney in children, as demonstrated by pyelography.

entered the hospital with a slight hematuria. Examination revealed a strongly positive Wassermann and widely dilated aortic arch. Urologic examination revealed only a slight deformity of one of the pelves suggesting tumor. In view of the other findings, the kidney condition was considered luetic. The patient died one year later, and autopsy revealed a hypernephroma with metastases to the liver.

A third case entered with a severe hematuria of several days' duration. The history showed that there had been a transient attack of diplopia ten months previously associated with a glycosuria. The glycosuria was still present with the hematuria. The case was considered inoperable, and the opinion was that there might be pancreatic and cerebral metastases.

Two cases in children, one with an exophthalmos and the other with a swelling to the side of one eye, were seen. Post-mortem examination of each revealed a neurocytoma with intracranial metastases. A third case in a child did not present itself for treatment until the tumor had reached huge proportions, weighing ten pounds.

The urologist must be ever on the alert for pitfalls. If any impression is to be made on the prognosis of malignant kidneys, the case must be seen early. Careful attention must be paid to any individual sign or symptoms as they appear. The urologic examination should be complete and thorough, including ureteral catheterization, functional and urinary studies and careful pyelographic studies. Hematuria is the most important leading symptom. Its presence nearly always means an organic lesion in the urinary tract and should never be considered lightly or without significance, even though it be transient. Patients should be encouraged to seek advice from the surgeon as early as possible, for in doing so, not only will the opportunity for cure of renal tumor be enhanced, but also other conditions producing similar signs. Thus, Kretschmer found, in an analysis of 200 cases of hematuria, that 43 per cent were due to new growths in the urinary tract.

SUMMARY

1. The incidence of malignant tumors of the kidney are to the extent of 0.25 to 1 per cent in adults; 0.06 to 0.1 per cent in children. Of tumors in general, they constitute from 0.5 to 2 per cent in adults, and about 20 per cent in children.

2. The pathogenesis of kidney tumors is still in the hypothetical stage. The types most commonly found are the hypernephroma, occurring chiefly in late adult life, and "embryonic mixed tumors" found during early childhood.

3. Clinically, all renal tumors should be considered malignant because of the great rarity of the benign types.

4. The classical signs of kidney tumor are hematuria, pain, and tumor. Hematuria is the most frequent initial symptom in adults, while tumor is in children.

5. The importance of each symptom should be considered initially as it appears, and the diagnosis not allowed to wait until the clinical picture is complete.

6. Only by thorough early investigation can we hope to influence the present appalling morbidity of 90 per cent.

7. The urological examination should always be complete and include a differential examination of the urine, functional studies, and ureteropyelography.

8. The correlation of the clinical findings and urological findings should be carefully entered into so that a diagnosis may be arrived at in the doubtful cases.

380 Post Street.

DISCUSSION

GEORGE F. SCHENCK, M. D. (Westlake Professional Building, Los Angeles) — Drs. Hinman and Kutzmann are to be congratulated on the straightforward and concise presentation of their subject. It is to be noted that they are lamenting over the fact that their cases were not seen early. Hematuria is the outstanding symptom of malignant tumors of the kidney.

Hematuria is a symptom that is perhaps the most constant and significant symptom in genito-urinary diseases. It may occur in nephritis, pyelitis, hydronephrosis, polycystic kidneys; kidney, ureteral, and bladder stones; tumors of the kidney, ureter, bladder, and urethra; ulcers of the bladder; adenoma of the prostate; carcinoma of the prostate; prostatitis, vesiculitis, stricture of the urethra, renal

tuberculosis, malaria, and several drug intoxications. It is a symptom that is due to a definite pathological condition that can be definitely determined in a large majority of the cases.

Unfortunately, the trend of all genito-urinary diseases is progressive. The vast majority of hematuria cases are given some internal medication and told to report in three or four days. Unfortunately, many cases of hematuria will subside spontaneously and not reoccur for months. In the meantime, much valuable time is being sacrificed, and the disease is progressing rapidly. In fact, nothing short of marked and persistent hematuria will get the patient a thorough examination, and if indicated, cystoscopy, kidney study, and pyelo-uretero-grams.

Personally I think if physicians would pay more personal attention to voided specimens of urine and do microscopical examinations of routine urine, they would discover hematuria cases earlier than heretofore.

A word about therapy in the malignant tumors of the kidney: Dr. Keyes makes a wide exposure by extending the usual oblique incision well forward, and, if need be, to divide the anterior sheath of the rectus muscle transversely. Then he does an extra-capsular nephrectomy. His reasons are it may delay metastases, there will be less oozing, less chance for infection, and a better opportunity to heal the incision by primary union.

Dr. Barringer thinks hypernephromas are hopeless for radium packs or deep x-ray therapy.

NATHAN G. HALE, M. D. (Capital National Bank Building, Sacramento) — The urological section is to be congratulated that this subject has been presented to us so clearly by those whose experience well fits them for the task.

Renal tumors are, in most instances, neglected because one of the first symptoms, hematuria, is treated expectantly. There could not be a better warning than blood in the urine, yet it is surprising to note the number of cases where blood in the urine sends the patient to the doctor, and the doctor treats this characteristic symptom lightly.

The urologist's difficulties in diagnosing an early tumor are great. The pyeloureterograms are not characteristic in many of the early cases, and, for that reason, pyeloureterograms, at intervals, should be insisted upon by the urologist when the diagnosis is not conclusive.

In operating, the so-called cardinal principle of removing the perirenal fat in toto with the kidney tumor, on account of possible invasion of this fat by the cancer, is the only procedure in renal surgery for malignant tumors that has been suggested as an improvement in technique for a number of years; and this is of little avail on account of the many cases that metastasize by way of the blood stream.

In conclusion, I hope that the stimulus of this excellent paper will start investigation concerning malignant renal tumors, which will result in an earlier diagnosis and a better surgical attempt at complete removal.

PAUL A. FERRIER, M. D. (Citizens Bank Building, Pasadena, Calif.)—Doctors Hinman and Kutzmann have made the thorough study that we have learned to expect of them. The conclusion cannot be escaped that present surgical methods in malignant tumors of the kidney are wellnigh futile—at best a short reprieve. It is a service to dissuade from unwarranted surgery. The problem awaits solution with that of deep-seated malignancies elsewhere.

DOCTOR HINMAN (closing)—In conclusion, I should like to emphasize the great importance of hematuria as an early symptom of renal tumor, and that this hematuria need not always be macroscopic before recognition. If physicians would acquire the habit of routine examination of urine, by having the patient void in three glasses and examining the second glass for evidence of disturbance in the bladder or above, much more definite findings would be possible. Microscopic study of such urine showing R. B. C. would be evidence of pathology, even though there would not be pronounced bleeding.

The writers appreciate the excellent discussions of their paper that have been given.

DOUBTFUL TUMORS—SHALL WE EXCISE A PIECE FOR DIAGNOSIS?

By A. R. KILGORE, M. D., *San Francisco*

In essence, this paper is a plea, not against diagnostic incision of tumors, but against delay between such incision and complete operation.

IF WE take out an appendix when the real trouble is a kidney stone, we can correct ourselves another day and still cure the patient. But if we leave live cancer cells in a patient and cause, by our interference or permit by our delay, metastasis to take place, we have lost the only chance we had of obtaining a cure. Cancer, of all diseases, must be treated right the first time.

Excision of a piece of tissue for diagnosis offers the most accurate method of diagnosis available, but under varying conditions it may or may not cause metastasis to take place. When it is safe, we ought to be prepared to use this method; when it is unsafe, we ought by all means to avoid it.

Excision of a piece of tissue or of an entire small growth for diagnosis has had ardent support and just as ardent condemnation. When the Harvard Cancer Commission and the New York Board of Health proposed the establishment of free tissue diagnostic services, a storm of criticism was aroused. Dr. Greenough, of the Harvard Cancer Commission, addressed a questionnaire to the members of the American Surgical and American Gynecological Associations to determine prevailing opinion. He found extraordinary disagreement among the men of widest experience in this country, and there is still anything but clear-cut opinion on the part of surgeons generally.

If there are definite facts available from which to draw definite conclusions, those facts ought to be generally recognized and our procedures standardized accordingly.

ANIMAL EXPERIMENTATION

Animal experimentation has not been of great help because the behavior of animal tumors in the matter of metastasis does not parallel that of human tumors closely enough to make it safe to accept experimental evidence in its entirety as applying to human neoplasms. There have been three outstanding communications, however, bearing directly or indirectly on the point in question. F. C. Wood found that aseptic incision of a transplanted sub-cutaneous tumor in rats did not materially increase the number of metastases, as demonstrated at autopsy several weeks later. He was working, however, with an adeno-carcinoma —the so-called Flexner-Jobling tumor—the histology of which is certainly not closely akin to that of human scirrhous or squamous cell cancers.

On the other hand, both Tyzzer and Knox have shown that a very small amount of gentle massage of various animal tumors enormously increases metastasis, and the latter author has shown that the amount of increase in metastasis produced by massage varies directly with the cellular malignancy of the tumor. Neither of these authors experimented with excision of a piece of tumor tissue, but the amount of massage (one to two and a half minutes) described in their experiments is probably not greater than the manipulation necessarily incident to the